UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 83

U. S. Naval Observatory, Washington 25, D. C. November 19, 1957

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS

MAY, 1957

By Winifred Sawtell Cameron

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.
No., the identifying number of the group assigned by Mt. Wilson.
Δl, the heliographic difference in longitude from the central meridian, measured positive to the west.
φ, the heliographic latitude, measured positive to the north.
ρ, the heliocentric angular distance from the line joining the centers of the Earth and Sun.
A, the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.
s, the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by M. The plate quality, which follows, is indicated by:

1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g.
2. The longitude of the central meridian, L_0.
3. The latitude of the center of the disc, B_0.
4. The total value of A.
5. The total value of s.

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
1.517	12307	−39	+32	52	6	1
N−3	12310	−26	+23	37	6	1
	12310	−26	+25	39	12	1
	12310	−25	+26	39	16	1
	12306	−21	+26	36	36	1
	12306	−21	+28	37	16	1
	12306	−17	+26	34	12	2
	12306	−16	+26	34	85	1
	12303	−10	+24	29	97	2
	12299	+14	− 6	14	16	2
	12299	+16	− 4	16	12	1
	12299	+19	− 5	19	12	1
	12299	+25	− 6	25	133	2
	12300	+17	−12	20	170	2
	12300	+18	−13	21	16	3
	12300	+19	−12	22	32	2
	12304	+35	−28	42	32	3
	12314	+35	+19	42	36	1
	12314	+36	+19	42	24	2
	12314	+38	+19	44	36	3
	12296	+45	− 8	45	16	1
	12296	+46	− 8	46	12	1
	12296	+54	−10	54	339	2
	12297	+53	−16	54	16	1
	12297	+54	−16	55	194	3
	(10)	(147)	(−4)		1382	41
2.551	12316	−77	+12	78	218	1
N−2	12315	−16	−27	28	36	1
	12315	−16	−26	27	24	1
	12310	−12	+28	34	36	3
	12305	−12	+25	31	32	1
	12306	− 8	+27	32	61	2
	12306	− 8	+29	34	48	1
	12306	− 4	+26	30	194	1
	12303	+ 4	+25	29	61	1
	12299	+27	− 6	27	24	1
	12299	+37	− 6	37	97	1
	12300	+31	−12	32	170	1
	12314	+47	+19	53	48	1
	12314	+49	+19	54	73	1
	12314	+54	+19	57	36	1
	12297	+55	−19	56	6	2
	12297	+55	−16	55	6	1
	12297	+60	−15	60	109	2
	12297	+64	−15	64	109	2
	12297	+65	−15	65	121	1
	12296	+66	− 9	66	388	1
	(11)	(133)	(−4)		1897	27
3.505	12317	−82	−17	82	48	1
N−3	12316	−64	+12	66	109	1
	12315	− 7	−27	25	121	1
	12315	− 6	−26	24	36	4
	12315	− 3	−25	23	121	2
	12305	0	+24	28	12	1
	12305	+ 1	+24	28	12	1
	12306	+ 3	+27	32	16	1
	12306	+ 4	+30	34	12	1
	12306	+ 5	+27	32	16	1
	12306	+ 7	+27	32	12	1
	12306	+10	+27	33	109	2
	12303	+16	+25	33	24	1
	12300	+45	−12	45	109	1
	12300	+46	−13	46	12	1
	12299	+51	− 5	51	61	1
	12297	+68	−19	68	97	2
	12297	+71	−16	71	73	1
	12297	+75	−15	75	48	1
	12297	+79	−15	79	121	1
	12296	+75	−12	75	73	2
	12296	+79	− 9	79	485	1
	(10)	(120)	(−4)		1727	29
4.537	12318	−80	−27	80	436	1
N−2	12317	−69	−16	69	24	1
	12316	−49	+13	52	73	1
	12315	+ 5	−28	25	109	1
	12315	+ 5	−27	25	36	2
	12315	+ 7	−25	24	48	1
	12315	+ 9	−25	24	36	2
	12315	+14	−24	25	218	3
	12305	+14	+25	32	16	1
	12306	+17	+28	36	24	2
	12306	+24	+27	39	97	1
	12300	+59	−13	59	109	1
	12299	+64	− 5	64	61	1
	12297	+78	−17	78	194	1
	(9)	(107)	(−4)		1481	19
5.603	12324	−85	+11	85	194	1
N−3	12324	−77	+10	77	485	3
	12318	−76	−31	77	533	3
	12318	−71	−28	72	145	3
	12318	−68	−29	70	36	1
	12318	−65	−28	66	339	3
	12323	−41	−19	43	6	1
	12316	−35	+13	39	73	2
	12316	−34	+12	37	6	1
	12315	+19	−27	31	145	3
	12315	+20	−25	28	48	1
	12315	+23	−26	31	73	2
	12315	+25	−25	32	97	4
	12315	+29	−25	36	291	3
	12306	+39	+27	50	85	1
	12300	+75	−13	75	61	1
	12299	+80	− 5	80	48	1
	(8)	(93)	(−4)		2665	34
6.522	12324	−77	+12	78	145	1
N−2	12324	−76	+14	77	194	1
	12324	−75	+11	76	194	1
	12324	−71	+11	73	170	2
	12324	−67	+ 8	68	32	2
	12324	−66	+11	67	32	1
	12324	−63	+10	64	194	2
	12324	−61	+10	63	339	2
	12318	−64	−32	66	364	2
	12318	−56	−29	59	194	4
	12318	−50	−28	54	339	1
	12316	−23	+13	27	48	1
	12322	−22	−15	25	32	2
	12315	+32	−27	39	145	2
	12315	+33	−26	39	24	2
	12315	+41	−24	45	24	1
	12315	+44	−24	47	315	1
	12306	+51	+28	58	73	1
	(6)	(80)	(−4)		2858	29
7.503	12324	−63	+13	65	170	1
N−3	12324	−62	+11	64	73	2
	12324	−60	+14	62	24	1
	12324	−58	+11	60	412	6
	12324	−58	+14	61	170	2
	12324	−55	+ 8	56	16	2

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12324	−53	+10	54	145	8
	12324	−50	+10	52	170	3
	12324	−47	+10	50	436	3
	12326	−54	+ 5	55	6	2
	12326	−51	+ 5	52	12	1
	12318	−53	−31	57	24	1
	12318	−53	−33	59	24	1
	12318	−52	−29	56	16	1
	12318	−51	−32	56	61	1
	12318	−50	−32	55	218	2
	12318	−43	−29	48	73	2
	12318	−41	−29	47	61	2
	12318	−37	−28	44	436	3
	12318	−36	−26	41	16	2
	12318	−34	−27	41	6	2
	12322	−18	−16	23	6	1
	12322	−16	−16	21	12	1
	12322	−16	−17	22	12	1
	12322	−10	−16	17	6	1
	12322	− 7	−14	14	6	1
	12316	−10	+14	20	48	1
	12315	+44	−26	48	145	2
	12315	+56	−23	59	315	1
	12306	+64	+28	69	97	1
	(7)	(67)	(−3)		3216	58
8.503	12324	−48	+13	51	133	1
N−4	12324	−47	+11	50	48	1
	12324	−46	+12	49	36	5
	12324	−46	+10	48	6	1
	12324	−45	+14	48	6	2
	12324	−44	+14	47	242	4
	12324	−44	+12	46	339	5
	12324	−43	+ 8	44	48	3
	12324	−43	+10	44	36	1
	12324	−40	+10	42	36	2
	12324	−38	+12	41	73	3
	12324	−38	+10	41	32	3
	12324	−37	+11	40	97	4
	12324	−35	+10	37	48	2
	12324	−35	+12	38	6	1
	12324	−33	+11	35	558	4
	12318	−40	−31	46	121	3
	12318	−39	−33	47	16	1
	12318	−37	−29	44	194	4
	12318	−36	−32	44	218	5
	12318	−27	−29	37	109	5
	12318	−26	−27	35	145	8
	12318	−25	−25	33	16	2
	12318	−24	−27	34	339	2
	12318	−22	−25	30	24	4
	(*)	−16	−17	22	12	1
	12322	− 8	−14	15	12	1
	12322	− 7	−11	12	48	3
	12322	− 1	−16	14	24	2
	12322	+ 5	−14	13	12	2
	12316	+ 4	+15	18	36	1
	12315	+56	−25	60	109	1
	12315	+69	−22	70	267	2
	(6)	(54)	(−3)		3446	89
9.501	12328	−83	+20	83	242	1
N−4	12324	−35	+13	38	121	1
	12324	−34	+11	36	36	1
	12324	−33	+13	36	73	5
	12324	−32	+10	34	32	3
	12324	−31	+11	34	339	1
	12324	−30	+14	34	242	5

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12324	−30	+12	33	12	9
	12324	−28	+ 9	32	61	3
	12324	−27	+11	31	24	1
	12324	−27	+15	33	12	2
	12324	−27	+12	32	16	1
	12324	−26	+10	29	73	2
	12324	−25	+12	29	48	2
	12324	−25	+10	28	97	6
	12324	−24	+12	29	73	2
	12324	−23	+13	28	12	2
	12324	−22	+10	25	48	3
	12324	−21	+14	26	6	1
	12324	−19	+11	24	558	1
	12318	−28	−30	37	6	1
	12318	−27	−32	38	85	1
	12318	−26	−32	38	145	6
	12318	−26	−30	36	242	10
	12318	−24	−28	35	48	1
	12318	−23	−28	34	12	2
	12318	−23	−31	35	121	4
	12318	−21	−27	32	24	1
	12318	−14	−27	28	170	5
	12318	−13	−29	29	121	7
	12318	−12	−26	26	24	3
	12318	− 9	−27	26	388	1
	12322	+ 5	−24	22	6	1
	12322	+ 7	−20	18	24	2
	12322	+10	−15	15	12	2
	12322	+12	−16	17	6	1
	12316	+17	+15	25	24	1
	12315	+69	−25	71	97	1
	12315	+85	−21	85	145	1
	(6)	(41)	(−3)		3825	103
10.507	12329	−80	+18	80	145	1
N−4	12328	−68	+21	71	267	1
	12324	−22	+14	27	97	1
	12324	−21	+13	25	24	1
	12324	−19	+17	28	48	2
	12324	−19	+14	26	97	6
	12324	−18	+11	23	97	5
	12324	−16	+15	24	194	4
	12324	−16	+13	23	170	3
	12324	−15	+14	23	24	3
	12324	−15	+11	21	194	5
	12324	−13	+15	22	24	2
	12324	−12	+13	19	16	1
	12324	−10	+12	17	267	7
	12324	− 9	+12	17	6	1
	12324	− 7	+11	16	73	2
	12324	− 5	+12	15	582	1
	12318	−14	−31	31	121	1
	12318	−12	−30	29	267	5
	12318	−12	−32	30	24	2
	12318	−11	−29	28	36	2
	12318	−11	−27	27	24	1
	12318	− 9	−28	27	48	1
	12318	− 8	−26	25	6	3
	12318	− 7	−30	28	48	4
	12318	− 6	−26	24	73	3
	12318	− 2	−26	24	6	2
	12318	− 1	−27	25	242	4
	12318	0	−26	24	24	3
	12318	+ 1	−27	25	12	1
	12318	+ 3	−25	23	48	3
	12318	+ 4	−26	24	339	1
	12327	− 7	−17	16	12	1
	12327	− 7	−18	17	6	1
	12322	+18	−17	24	24	1
	12322	+22	−19	26	16	1

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12322	+22	−17	26	12	1
	12322	+24	−14	26	6	1
	12322	+26	−24	33	6	1
	12316	+31	+15	35	16	1
	12315	+80	−25	80	145	1
	(8)	(28)	(−3)		3886	91
12.754	12332	−80	−14	80	218	1
N−1	12331	−78	−19	78	194	1
	12331	−67	−17	68	158	3
	12330	−67	−12	67	242	2
	12330	−66	−13	67	73	1
	12330	−61	−12	62	85	2
	12330	−59	−11	60	145	1
	12329	−49	+19	54	121	1
	12328	−39	+21	45	218	1
	12324	+ 5	+17	21	16	1
	12324	+ 8	+15	20	121	1
	12324	+13	+15	22	194	5
	12324	+14	+12	21	533	10
	12324	+16	+12	22	48	1
	12324	+17	+12	24	194	3
	12324	+19	+12	25	194	2
	12324	+21	+ 8	24	36	3
	12324	+24	+11	27	703	2
	12318	+13	−31	30	109	1
	12318	+14	−32	32	48	1
	12318	+16	−30	32	388	2
	12318	+19	−29	34	121	2
	12318	+24	−26	34	436	2
	12318	+27	−28	36	194	3
	12318	+32	−26	38	485	2
	12322	+46	−18	48	61	1
	12322	+47	−17	50	48	1
	12322	+53	−16	54	121	1
	(8)	(358)	(−3)		5504	57
13.508	12332	−70	−15	70	145	1
N−4	12331	−64	−22	65	97	1
	12331	−56	−19	58	48	4
	12331	−54	−19	55	32	2
	12330	−55	−13	56	242	2
	12330	−54	−14	55	109	3
	12330	−50	−13	51	12	1
	12330	−48	−12	49	218	4
	12329	−39	+18	44	85	1
	12328	−29	+20	36	194	1
	12324	+18	+15	26	97	2
	12324	+20	+14	26	36	3
	12324	+21	+15	26	12	2
	12324	+23	+13	28	485	11
	12324	+23	+16	30	48	1
	12324	+25	+15	31	16	3
	12324	+25	+13	29	121	5
	12324	+25	+12	29	97	5
	12324	+27	+13	32	145	3
	12324	+30	+13	34	218	4
	12324	+31	+ 9	34	48	3
	12324	+34	+12	37	630	5
	12318	+24	−30	36	73	2
	12318	+26	−31	37	24	2
	12318	+27	−29	36	291	3
	12318	+31	−28	38	32	1
	12318	+35	−25	40	339	5
	12318	+38	−27	44	133	6
	12318	+43	−25	46	388	1
	12322	+57	−16	60	48	3
	12322	+60	−16	62	32	1

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12322	+64	−15	65	194	4
	(8)	(348)	(−3)		4689	95
14.622	12337	−79	−23	79	97	1
N−2	12337	−76	−24	76	73	1
	12337	−71	−25	72	73	1
	12336	−68	+22	71	36	2
	12322	−54	−15	55	170	1
	12331	−48	−21	51	97	1
	12331	−40	−18	43	36	1
	12331	−37	−17	40	61	1
	12330	−40	−13	41	242	1
	12330	−39	−14	41	121	3
	12330	−33	−11	34	145	2
	12330	−33	−12	34	32	1
	12330	−31	−11	32	109	2
	12329	−25	+18	33	73	1
	12328	−15	+21	27	218	1
	12324	+34	+15	38	48	1
	12324	+35	+14	39	48	1
	12324	+37	+13	41	194	5
	12324	+39	+15	43	24	1
	12324	+43	+12	45	170	4
	12324	+45	+12	47	121	4
	12324	+47	+ 9	50	170	1
	12324	+49	+12	52	630	1
	12318	+37	−31	45	32	1
	12318	+41	−30	47	339	3
	12318	+44	−28	49	36	1
	12318	+49	−24	53	533	3
	12318	+56	−25	59	436	1
	12322	+72	−17	73	32	1
	12322	+80	−15	80	145	1
	(10)	(333)	(−3)		4541	49
15.506	12339	−77	+ 8	77	145	2
N−3	12338	−70	+ 5	70	388	1
	12337	−69	−27	70	97	4
	12337	−60	−24	63	32	1
	12337	−58	−25	61	48	1
	12336	−56	+20	60	48	2
	12335	−54	−19	56	24	1
	12335	−48	−19	51	12	1
	12332	−41	−16	43	133	1
	12331	−36	−22	39	48	2
	12331	−26	−18	30	32	2
	12331	−25	−18	29	36	1
	12330	−27	−14	30	267	2
	12330	−26	−15	29	73	2
	12330	−21	−13	23	48	1
	12330	−20	−11	22	109	2
	12330	−19	−13	23	12	2
	12330	−17	−11	19	61	2
	12330	−16	−11	17	48	1
	12329	−14	+18	25	73	1
	12334	− 5	−11	9	12	1
	12328	− 4	+21	23	218	1
	12333	+38	−17	41	61	4
	12333	+40	−15	42	36	3
	12324	+45	+16	48	12	1
	12324	+49	+14	52	170	5
	12324	+49	+15	53	12	2
	12324	+51	+15	54	32	1
	12324	+51	+14	54	97	3
	12324	+53	+14	56	218	2
	12324	+54	+13	56	24	2
	12324	+57	+14	60	218	2
	12324	+63	+14	65	703	1

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12318	+48	−30	54	12	1
	12318	+53	−29	56	194	2
	12318	+55	−27	59	121	3
	12318	+55	−24	58	36	2
	12318	+58	−26	61	48	1
	12318	+62	−23	65	388	3
	12318	+65	−25	66	32	1
	12318	+69	−24	70	485	1
	(14)	(322)	(−3)		4863	74
16.503	12339	−64	+10	65	73	1
N−4	12339	−63	+11	64	24	1
	12339	−61	+ 8	62	24	1
	12339	−60	+12	62	16	1
	12338	−56	+ 6	56	218	1
	12337	−55	−27	59	73	3
	12337	−54	−26	57	24	1
	12337	−53	−27	56	32	2
	12337	−51	−25	54	48	2
	12337	−51	−26	55	16	1
	12337	−46	−24	50	48	3
	12337	−44	−24	48	32	2
	12336	−49	+23	54	36	1
	12336	−42	+22	47	24	1
	12335	−34	−16	36	16	2
	12332	−27	−14	31	109	1
	12330	−14	−13	18	339	5
	12330	−13	−12	16	6	1
	12330	− 7	−11	12	73	4
	12330	− 7	− 9	12	109	2
	12330	− 5	− 9	9	12	3
	12330	− 5	− 8	8	16	4
	12330	− 2	− 8	7	73	2
	12331	−13	−16	19	24	1
	12331	−11	−16	17	12	1
	12329	0	+20	23	73	1
	12328	+ 9	+22	25	194	1
	12334	+10	− 9	13	12	1
	12333	+50	−16	52	194	2
	12333	+53	−15	54	48	1
	12333	+54	−14	55	48	3
	12333	+55	−13	55	48	3
	12318	+63	−28	65	121	3
	12318	+64	−27	66	73	1
	12318	+73	−22	74	533	2
	12318	+80	−24	80	485	2
	12324	+63	+14	65	170	4
	12324	+65	+14	66	36	2
	12324	+66	+16	68	73	1
	12324	+68	+14	70	145	1
	12324	+70	+14	72	145	4
	12324	+74	+14	76	824	1
	(14)	(308)	(−2)		4699	80
17.567	12343	−71	−40	75	121	1
N−2	12339	−49	+10	51	109	2
	12339	−44	+ 9	45	32	1
	12339	−44	+12	46	16	1
	12338	−46	+ 8	47	73	4
	12338	−42	+ 6	43	339	2
	12337	−41	−27	46	73	1
	12337	−37	−26	43	24	1
	12337	−37	−25	42	24	1
	12337	−35	−23	39	36	2
	12337	−31	−23	36	48	2
	12337	−29	−23	35	36	1
	12336	−35	+24	43	32	1
	12336	−31	+23	38	16	3

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12336	−26	+23	35	36	1
	12335	−18	−16	24	61	2
	12332	−13	−14	17	158	1
	12330	+01	−12	9	291	3
	12330	+ 7	−10	12	145	2
	12330	+14	− 7	16	97	2
	12331	+ 3	−16	15	16	1
	12331	+ 5	−16	16	16	1
	12329	+14	+20	26	61	1
	12341	+16	+28	34	36	1
	12328	+24	+22	34	218	1
	12333	+66	−16	67	461	2
	12333	+69	−14	69	73	2
	12333	+71	−14	71	339	1
	12318	+76	−29	76	145	1
	12324	+77	+13	78	242	1
	(15)	(294)	(−2)		3374	46
18.597	12346	−80	−10	80	339	1
N−2	12345	−78	−12	78	145	2
	12345	−71	−11	71	36	1
	12343	−59	−39	65	48	1
	12338	−35	+10	36	61	1
	12338	−34	+ 9	36	97	4
	12338	−31	+ 8	33	24	3
	12338	−29	+ 7	32	121	2
	12338	−29	+ 9	32	16	1
	12338	−27	+ 6	30	182	2
	12337	−27	−27	36	61	2
	12337	−25	−25	34	36	2
	12337	−22	−23	29	24	4
	12337	−17	−20	25	32	2
	12337	−16	−23	26	48	2
	12336	−15	+24	30	16	1
	12336	− 8	+24	27	16	1
	12332	+ 1	−14	13	109	1
	12330	+15	−12	17	291	2
	12330	+19	−10	22	16	1
	12330	+21	− 9	23	73	2
	12330	+26	− 6	26	16	2
	12329	+27	+20	35	32	1
	12329	+28	+18	35	12	2
	12341	+28	+30	42	36	2
	12341	+31	+29	43	61	4
	12341	+34	+30	45	48	1
	12328	+37	+22	43	194	1
	12333	+79	−16	79	388	1
	12333	+85	−15	85	291	1
	(12)	(281)	(−2)		2869	53
19.713	12347	−70	+14	72	73	2
M−1	12347	−66	+14	68	121	3
	12346	−65	−10	65	315	1
	12345	−63	−13	64	145	2
	12345	−58	−12	60	48	3
	12338	−20	+10	24	48	1
	12338	−18	+ 9	22	85	3
	12338	−17	+ 8	21	36	2
	12338	−14	+ 7	17	109	2
	12338	−13	+ 8	17	121	5
	12338	−11	+ 6	14	182	1
	12337	−14	−27	29	16	2
	12337	− 9	−23	24	24	2
	12337	− 6	−23	22	36	1
	12337	− 5	−23	21	16	1
	12337	− 3	−21	19	16	1
	12337	0	−24	23	16	2
	12342	− 6	−17	16	12	2

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12342	− 4	−18	17	12	2
	12344	+ 4	+38	41	16	1
	12332	+15	−14	19	97	1
	12330	+30	−13	33	182	1
	12330	+32	−13	34	24	2
	12330	+35	−11	36	12	1
	12330	+40	− 7	41	12	1
	12330	+43	− 7	43	24	1
	12329	+42	+19	46	6	1
	12329	+44	+19	48	16	1
	12341	+46	+28	54	48	1
	12341	+47	+27	54	24	1
	12341	+48	+28	55	24	1
	12341	+50	+27	57	24	1
	12341	+52	+28	58	48	1
	12341	+54	+28	60	170	1
	12334	+51	−11	52	6	1
	12334	+55	−12	56	24	2
	12334	+57	−11	57	24	1
	12328	+55	+21	58	170	1
	(13)	(266)	(−2)		2382	59
20.578	12350	−80	−12	80	97	4
M−4	12350	−67	−11	67	194	1
	12347	−60	+15	63	16	5
	12347	−60	+16	63	12	4
	12347	−59	+15	62	73	6
	12347	−58	+16	61	6	1
	12347	−56	+15	58	12	3
	12347	−54	+14	56	12	5
	12347	−53	+14	55	73	3
	12345	−55	−14	56	6	2
	12345	−52	−14	53	6	3
	12345	−50	−13	52	133	8
	12345	−47	−12	49	36	5
	12345	−47	−14	48	6	2
	12346	−53	−10	54	182	1
	12338	− 8	+10	15	24	3
	12338	− 6	+ 9	13	12	4
	12338	− 6	+12	15	6	1
	12338	− 5	+ 9	13	32	3
	12338	− 4	+ 7	11	12	1
	12338	− 4	+12	14	6	1
	12338	− 3	+ 8	12	12	3
	12338	− 3	+ 7	11	24	2
	12338	− 2	+ 7	10	16	3
	12338	0	+ 7	10	36	6
	12338	+ 1	+ 6	8	121	1
	12337	− 1	−28	26	16	1
	12337	0	−29	27	12	1
	12337	+ 5	−24	23	16	4
	12337	+10	−24	25	12	1
	12349	0	−13	11	12	3
	12344	+13	+38	42	6	1
	12348	+15	−19	24	6	1
	12348	+16	−17	23	16	3
	12348	+16	−18	24	12	1
	12348	+18	−17	24	12	2
	12348	+19	−16	25	16	2
	12332	+26	−14	28	61	1
	12330	+40	−13	42	145	1
	12330	+50	− 8	51	6	2
	12330	+52	− 8	53	12	1
	12329	+54	+18	57	12	1
	12341	+55	+28	61	32	1
	12341	+55	+27	61	12	2
	12341	+58	+27	63	12	2
	12341	+63	+27	67	145	3
	12334	+61	−11	61	16	1
	12334	+67	−12	67	12	1
	12328	+64	+21	66	170	1
	(15)	(254)	(−2)		1936	118
21.704	12353	−80	+21	80	388	1
M−2	12350	−65	−11	65	36	1
	12350	−65	−13	65	36	1
	12350	−65	−14	66	12	1
	12350	−63	−12	63	48	1
	12350	−59	−13	60	145	2
	12352	−65	−23	66	32	2
	12352	−61	−23	64	16	1
	12347	−46	+15	48	145	4
	12347	−45	+16	48	16	3
	12347	−43	+14	45	16	2
	12347	−42	+16	45	16	3
	12347	−39	+15	43	36	4
	12347	−38	+13	41	12	1
	12347	−37	+13	41	97	2
	12346	−36	−10	37	206	1
	12345	−36	−14	38	12	1
	12345	−35	−13	36	121	2
	12345	−32	−12	34	48	3
	12345	−31	−10	32	32	1
	12338	+ 5	+10	13	16	1
	12338	+ 6	+12	15	16	3
	12338	+ 9	+ 9	16	36	5
	12338	+12	+ 8	16	12	2
	12338	+15	+ 7	18	61	2
	12338	+16	+ 6	18	145	2
	12349	+13	−14	17	16	4
	12349	+14	−12	16	12	3
	12349	+16	−12	19	16	7
	12337	+20	−24	29	24	6
	12337	+25	−24	33	12	1
	12348	+30	−18	34	12	4
	12348	+31	−19	35	48	1
	12348	+32	−18	35	48	4
	12348	+34	−16	36	6	1
	12348	+34	−17	36	6	1
	12348	+35	−19	38	6	2
	12348	+36	−17	39	85	11
	12332	+41	−14	43	85	1
	12351	+47	−19	50	6	1
	12330	+55	−12	56	145	2
	12341	+70	+28	74	48	1
	12341	+77	+27	78	121	1
	12328	+80	+21	80	145	1
	(15)	(240)	(−2)		2597	104
22.573	12353	−68	+18	70	533	1
M−4	12353	−65	+19	67	6	1
	12350	−55	−14	56	6	1
	12350	−52	−14	53	16	3
	12350	−52	−15	54	48	5
	12350	−52	−16	54	24	2
	12350	−49	−17	52	6	1
	12350	−48	−15	50	12	4
	12350	−46	−15	47	158	2
	12350	−45	−15	46	6	2
	12352	−51	−26	55	6	1
	12352	−48	−25	52	6	1
	12352	−47	−24	51	6	3
	12347	−36	+14	39	16	4
	12347	−36	+15	39	12	1
	12347	−35	+13	37	73	3
	12347	−34	+13	37	6	1
	12347	−32	+14	35	12	4

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12347	−30	+15	34	6	1
	12347	−28	+14	33	12	4
	12347	−27	+13	32	16	3
	12347	−27	+12	31	12	1
	12347	−26	+13	30	73	2
	12346	−25	−12	26	170	1
	12345	−23	−14	26	61	5
	12345	−23	−13	25	12	3
	12345	−18	−13	22	12	3
	12354	+ 3	−20	18	12	2
	12354	+ 3	−18	16	12	4
	12354	+ 4	−20	18	12	2
	12354	+ 5	−17	16	24	3
	12354	+ 5	−17	16	6	1
	12338	+16	+11	21	16	4
	12338	+17	+ 8	21	6	1
	12338	+17	+13	23	6	3
	12338	+18	+10	22	12	4
	12338	+21	+11	24	12	4
	12338	+26	+ 7	28	36	2
	12338	+27	+ 6	29	133	1
	12349	+25	−13	27	12	3
	12349	+25	−14	28	6	1
	12349	+26	−12	28	6	2
	12349	+26	−14	29	6	1
	12349	+28	−12	30	6	1
	12349	+28	−13	31	6	1
	12349	+31	−12	33	12	5
	12349	+32	−12	34	24	3
	12337	+33	−21	36	6	3
	12337	+34	−23	38	6	1
	12337	+37	−22	41	12	3
	12348	+43	−17	45	16	4
	12348	+44	−17	46	36	7
	12348	+45	−16	46	85	3
	12348	+48	−17	51	16	3
	12348	+48	−15	50	12	1
	12348	+50	−16	52	145	5
	12332	+54	−13	55	61	1
	12330	+68	−10	68	73	3
	(13)	(228)	(−2)		2159	145
23.541	12357	−85	−24	85	242	1
N−2	12353	−54	+20	58	558	1
	12350	−39	−12	41	73	1
	12350	−38	−13	40	36	2
	12350	−34	−13	35	194	1
	12347	−24	+15	30	24	2
	12347	−22	+14	27	73	3
	12347	−22	+17	29	12	1
	12347	−17	+16	24	32	1
	12347	−16	+15	24	48	2
	12347	−14	+14	22	85	2
	12346	−12	−10	14	230	1
	12345	−10	−12	14	48	1
	12345	− 5	−15	15	16	1
	12354	+14	−19	23	73	2
	12354	+15	−17	22	61	1
	12354	+15	−15	20	48	1
	12354	+17	−15	22	170	1
	12339	+30	+11	33	109	2
	12339	+34	+10	36	73	1
	12338	+40	+ 8	42	32	1
	12338	+42	+ 7	43	194	1
	12349	+41	−10	42	16	1
	12349	+46	−10	47	32	1
	12348	+56	−17	58	97	3
	12348	+63	−16	64	291	1
	12332	+66	−12	66	73	1
	(12)	(215)	(−2)		2940	37
24.524	12357	−69	−24	71	242	1
N−4	12353	−53	+21	56	12	1
	12353	−41	+21	45	485	2
	12350	−26	−12	27	48	1
	12350	−26	−13	28	6	1
	12350	−21	−12	23	194	1
	12347	−11	+17	22	12	1
	12347	− 8	+15	19	16	2
	12347	− 8	+17	21	6	1
	12347	− 6	+17	20	16	2
	12347	− 3	+15	16	48	4
	12347	− 1	+14	15	61	2
	12356	−11	+22	25	12	2
	12356	− 8	+20	23	73	8
	12356	− 7	+21	24	16	1
	12356	− 6	+20	22	61	3
	12346	+ 1	− 9	8	218	1
	12345	+ 3	−12	11	12	1
	12345	+11	−13	15	12	1
	12355	+15	−39	42	6	2
	12354	+27	−19	34	194	9
	12354	+29	−15	33	16	1
	12354	+31	−15	34	12	2
	12354	+32	−14	34	97	3
	12339	+43	+12	44	61	3
	12339	+47	+12	50	97	2
	12338	+54	+ 9	55	16	1
	12338	+55	+ 8	56	145	1
	12349	+55	−10	55	6	2
	12349	+60	−10	60	6	1
	12337	+60	−20	62	6	1
	12337	+65	−20	66	6	1
	12348	+69	−16	69	48	3
	12348	+72	−15	72	24	1
	12348	+78	−15	78	242	1
	12332	+75	−11	75	97	1
	(15)	(202)	(−1)		2629	71
25.641	12357	−55	−23	57	291	1
N−2	12353	−26	+22	34	582	1
	12358	−14	−21	24	24	1
	12350	−12	−11	15	48	1
	12350	− 6	−11	12	194	1
	12356	+ 5	+22	24	48	1
	12356	+ 6	+22	24	36	1
	12356	+ 7	+21	23	145	2
	12356	+10	+21	24	121	2
	12347	+ 7	+17	21	16	2
	12347	+ 9	+16	20	12	2
	12347	+13	+16	21	16	1
	12347	+15	+16	23	121	2
	12346	+16	− 9	18	218	1
	12346	+18	− 9	21	6	1
	12354	+40	−20	44	242	2
	12354	+43	−16	45	16	1
	12354	+46	−14	47	97	3
	12339	+63	+11	64	170	1
	12338	+69	+ 7	71	121	1
	12349	+71	−11	71	97	1
	(11)	(187)	(−1)		2621	29
26.600	12360	−80	−25	80	582	2
N−2	12357	−42	−24	46	242	1

MAY

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12353	−14	+22	26	533	1
	12358	+ 3	−20	18	16	2
	12350	+ 3	−10	9	48	1
	12350	+ 6	−11	12	218	1
	12356	+17	+22	28	97	2
	12356	+19	+21	28	73	3
	12356	+22	+21	30	170	4
	12347	+27	+16	32	121	3
	12346	+29	− 8	31	242	1
	12346	+31	− 8	32	16	2
	12354	+54	−20	56	242	1
	12354	+55	−17	56	73	2
	12354	+57	−16	58	73	1
	12354	+57	−15	58	97	1
	12354	+61	−14	62	121	2
	12339	+75	+10	76	145	1
	(10)	(175)	(−1)		3109	31
27.787	12360	−65	−24	66	339	1
N−1	12357	−30	−24	36	48	1
	12357	−26	−23	33	242	2
	12353	+ 2	+25	26	24	1
	12353	+ 4	+22	24	533	1
	12362	+ 3	−10	9	12	1
	12362	+ 5	−10	10	24	1
	12358	+17	−21	25	48	2
	12358	+22	−19	27	24	1
	12350	+24	−12	25	194	1
	12356	+30	+23	37	36	1
	12356	+35	+23	41	73	2
	12356	+37	+19	43	121	3
	12347	+45	+15	47	73	2
	12346	+46	−10	47	218	1
	12354	+70	−21	71	170	1
	(10)	(159)	(−1)		2179	22
28.496	12360	−59	−25	62	36	3
N−4	12360	−55	−25	58	364	1
	12357	−19	−24	30	16	4
	12357	−16	−23	27	194	2
	12357	−16	−25	28	36	4
	12357	−16	−26	29	24	2
	12353	+ 3	+22	23	6	1
	12353	+ 6	+26	27	6	1
	12353	+ 9	+24	26	6	1
	12353	+11	+26	29	12	2
	12353	+12	+23	26	436	1
	12362	+12	−10	15	32	2
	12362	+14	− 9	16	6	1
	12362	+16	− 8	17	16	1
	12358	+27	−19	33	48	3
	12358	+32	−18	35	36	1
	12350	+33	−10	34	170	1
	12356	+39	+26	47	12	2
	12356	+40	+27	48	16	1
	12356	+44	+25	51	24	3
	12356	+46	+23	52	36	2
	12356	+46	+22	51	16	1
	12347	+54	+16	56	24	3
	12347	+55	+17	58	24	1
	12346	+56	− 8	56	194	1
	12354	+80	−19	80	170	2
	12354	+85	−12	85	73	1
	(10)	(150)	(−1)		2033	48

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
29.500	12365	−80	−18	80	388	1
N−3	12360	−45	−25	50	48	2
	12360	−44	−25	49	32	1
	12360	−41	−25	46	388	2
	12357	− 5	−24	24	36	2
	12357	− 4	−23	22	194	2
	12357	− 3	−25	24	218	5
	12353	+13	+22	26	6	1
	12353	+15	+22	27	6	1
	12353	+24	+23	33	485	1
	12362	+25	−10	26	48	4
	12362	+25	−12	26	48	1
	12362	+27	−11	29	36	1
	12362	+29	− 9	31	48	2
	12358	+39	−19	43	32	3
	12358	+45	−17	47	32	1
	12361	+39	+20	44	24	3
	12350	+46	− 9	46	242	1
	12356	+50	+27	56	12	1
	12356	+52	+27	58	48	2
	12356	+60	+23	63	24	3
	12347	+67	+16	70	24	2
	12346	+69	− 7	69	194	2
	(11)	(136)	(−1)		2613	44
30.599	12365	−66	−17	66	388	2
N−1	12368	−34	−18	37	61	1
	12360	−29	−24	36	32	1
	12360	−27	−24	35	339	2
	12357	+ 8	−24	24	24	1
	12357	+12	−23	25	242	2
	12357	+12	−24	26	291	3
	12353	+39	+23	45	727	1
	12362	+41	−11	42	145	1
	12362	+46	− 9	46	48	2
	12361	+56	+20	59	36	1
	12350	+61	− 9	61	242	1
	12356	+66	+26	70	267	1
	12356	+73	+25	76	242	1
	12346	+85	− 8	85	291	1
	(10)	(122)	(−1)		3375	21
31.504	12365	−53	−18	55	582	4
N−2	12368	−26	−20	32	16	1
	12368	−25	−17	29	97	3
	12368	−24	−19	29	48	2
	12368	−23	−20	28	24	3
	12368	−22	−18	26	61	2
	12368	−21	−19	27	61	1
	12360	−16	−25	29	339	1
	(*)	+ 1	− 4	4	16	1
	12357	+23	−21	29	12	1
	12357	+23	−25	33	109	6
	12357	+24	−23	32	267	2
	12357	+25	−24	34	121	2
	12357	+26	−22	33	6	1
	12353	+50	+23	54	533	1
	12362	+54	−11	54	16	2
	12362	+59	−10	59	16	2
	12361	+61	+20	63	16	2
	12361	+67	+22	70	24	2
	12358	+67	−18	68	32	1
	12369	+67	+43	74	36	2
	12350	+74	− 8	74	170	1
	12356	+78	+27	78	388	2
	(12)	(110)	(−1)		2990	45

Mean for 30 days, $A=3016$, $r=164.6$

NAVY-DPPO PRNC WASH